a sailor and devoted to science." And that seems to express his attitude throughout all his work.

W. A. Herdman.

The death is announced in the *Chemiker Zeitung* of June 24 of Prof. W. Hallwachs, of the Technische Hochschule, Dresden, on June 20. Prof. Hallwachs, who was sixty-three years of age, was known for his researches on electricity, particularly on the photo-electric effect. The same journal also records the death of Prof. Otto Lehmann, on June 20, at the age of sixty-seven. Prof. Lehmann, who has occupied the chair of physics at the Technische Hochschule at Karlsruhe since 1889, was best known for his work on liquid crystals. His first paper on this subject was published in 1890, and his further researches were embodied in two monographs published later. In addition, he carried out work of importance in connexion with discharge and cathode-ray phenomena.

Current Topics and Events.

Col. E. M. Jack has been appointed Director-General of the Ordnance Survey in succession to Sir Charles Close, who is retiring in August.

The *Chemiker Zeitung* announces that Prof. H. Kamerlingh Onnes, director of the Physical Institute of the University of Leyden; Dr. P. Zeeman, professor of physics at the University of Amsterdam; and Dr. N. Bohr, professor of theoretical physics at the University of Copenhagen, have been elected corresponding members in the Physical-Mathematical Class of the Prussian Academy of Sciences, Berlin.

The Charles P. Daly medal of the American Geographical Society has been presented on behalf of the society by the American Ambassador to Sir Francis Younghusband. The medal, which was instituted under the will of the late Charles P. Daly, sometime president of the American Geographical Society, is awarded for valuable or distinguished geographical services or labours, and that presented to Sir Francis Younghusband bears the inscription, "For explorations in Northern India and Tibet and for geographical publications on Asiatic and African borders of the Empire."

Some appointments have recently been made on the scientific staff of the Field Museum of Natural History, Chicago. Mr. R. Linton has been attached to the department of anthropology as assistant curator of North American ethnology. Mr. Linton has carried out extensive investigations, principally archæological, in the eastern, central, and south-western United States, as well as in Central America and Polynesia. Recently he has returned from an expedition to the Marquesas Islands for ethnological and archæological researches, undertaken under the auspices of the Bishop Museum of Honolulu, Hawaii. A new division of taxonomy has been created in the department of botany, and Mr. J. F. Macbride, now in Peru at the head of a botanical expedition for the Field Museum, has been designated as assistant curator. In the department of zoology, Dr. C. E. Hellmayr, well known for his extensive work on Neotropical birds, has been appointed associate curator of birds. Dr. Hellmayr was formerly connected with the Rothschild Museum at Tring, and more recently has been with the Museum of the University of Munich. Mr. Heller, a former associate of Theodore Roosevelt, and Mr. J. T. Zimmer have been appointed assistant curator of mammals and assistant curator of birds respectively; they are at present engaged in field work in Central Peru. Mr. Karl P. Schmidt, formerly with the American Museum of Natural History, New York, has been appointed as assistant curator of reptiles and batrachians.

Junior Beit Memorial Fellowships for medical research of the annual value of 350*l.*, and tenable for three years, have been awarded by the trustees to the following, the subject and place of research being given after each: Mr. E. B. Verney: The physiology and pathology of urinary secretion, at the Institute of Physiology, University College, London; Prof. F. Cook: A study of the neuromuscular apparatus of the uterus, at Guy's Hospital; Dr. J. L. Rosedale: The chemistry of normal and pathological tissue with special reference to the protein and nuclein constituents, at St. Thomas's Hospital Medical School, London; Mr. R. Hilton: The study of the blood gases in various stages of pulmonary collapse produced by artificial pneumothorax; the condition of the circulation in the collapsed lung, at the Lænnec Hospital, Paris, and at St. Bartholomew's Hospital; Mr. A. St. G. J. M'C. Huggett: The investigation of the function of the placenta in relation to the passage of gases and other substances from the mother to the fœtus and the cause of fœtal apnœa, at the Sherrington School of Physiology, St. Thomas's Hospital, and at the Brown Animal Institution at Vauxhall; and Mr. V. D. Allison: The investigation of the nature and properties of a hitherto undescribed substance which has a strong bacterioidal, bacteriolytic and bacterio-inhibitory action—named lysozyme, at the Institute of Pathology and Research, St. Mary's Hospital. Fourth year Fellowships of the annual value of 400*l.* have been awarded to Dr. D. Keilin: The life-histories of protozoa pathogenic to insects; the life-history, anatomy and physiology of insects, at the Molteno Institute for Research in Parasitology, Cambridge; and Mr. I. de B. Daly: Auriculo-ventricular block, at the Institute of Physiology, University College, London. The trustees of the Beit Scientific Research Fellowships have re-elected Mr. H. L. Riley and Mr. W. A. P. Challenor to fellowships for the year commencing September 1922, and elected Mr. H. W. Buston to a fellowship for the same period. All the fellows are required to carry out their research at the Imperial College of Science and Technology. Mr. Riley will continue his research on "The

Atomic Weight of Silver, and the Dielectric Constants of Dry Gases" in the chemistry department, and Mr. Challenor will continue his work on "Ring Formation in the Aromatic and Aliphatic Series of Organic Chemistry" in the chemistry department, both under the direction of Prof. H. B. Baker. Mr. Buston will carry out investigations on "Nitrogenous Metabolism in Plants" in the biochemistry department under the supervision of Prof. J. B. Farmer.

THE final attempt, at least for this year, to reach the summit of Mount Everest was made on June 7. The party, according to General Bruce's despatch to the *Times*, consisted of Messrs. Mallory, Somervell, Finch, Wakefield and Crawford, with native coolies. From the outset bad weather was experienced. Captain Finch, feeling the result of his great exertions during the previous climb, had to give up and return. On the North Col the rest of the party were caught in an avalanche; Messrs. Mallory, Somervell and Crawford and one porter were able to extricate themselves unhurt, but the second party consisting of porters were overwhelmed. Three of them were rescued, but seven lost their lives. The attempt to gain the summit was then abandoned. General Bruce writes in terms of great praise of the loyalty and devotion of the native porters, whose loss the expedition felt keenly. Most of the Europeans with the expedition appear to be suffering from exposure at high altitudes; there are several cases of frostbite. It is not yet decided if a new attempt on Mount Everest is to be made next season. Several members of the exepedition, including Colonel Strutt, Dr. Longstaff and Captain Finch, have already reached England.

FOR some time past the practicability of measuring the depth of the ocean by means of sound waves reflected from the bottom has been discussed. A short explosive signal is made at the ship's hull and the time of this, and the echo from the bottom, are recorded. Apparently corrections are made for temperature effects on the velocity of transmission of the signal. Obviously the measurements can be repeated very quickly, or they may even be carried out automatically. It was announced in New York, on July 6, that extended trials had been made by Dr. Hayes, on board one of the U.S.A. destroyers, with much success. The outline of the sea bottom on a traverse between Rhode Island and Gibraltar is said to have been charted and minute records between Josephine and Tysburg Banks have been obtained. The bottom here is an extensive plain, bordered by mountains and tablelands rising to a height of 4000 feet above the plain, and containing several unrecorded deeps. Doubtless the apparent uniformity of level over vast areas of ocean bottom is to be explained partly by the paucity of deep soundings: this applies particularly to much of the Pacific Ocean. Should the new method prove trustworthy on critical investigation it will be possible to study the minor differences of depth with ease.

A MEMORANDUM regarding the probable amount of monsoon rainfall in 1922 was submitted to the Government of India in the early part of June by Dr. G. T. Walker, Director-General of Observatories. As frequently happens there are said to have been temporary advances of the monsoon in May, and in early June the rains began much earlier than usual in upper India, but the advance did not persist. The monsoon rainfall is affected by previous conditions over various parts of the earth, and a summary is given of the recent data which appear to be of importance. Among the factors stated as available are: a slight excess of snow in the mountain region of north-west India, a deficiency of rainfall over Java during the period of October to February, an excess of rain in Ceylon during May, and an excess of pressure at Mauritius in the same month. The data of Java, the Azores, and South America are decidedly favourable, of Iceland and the Cape scarcely appreciable, and of the east African coast decidedly unfavourable. The resulting indication shows that the Peninsula rainfall will be in excess, and for north-west India the rain is likely to be slightly deficient but not far from the normal. The establishment of the Arabian Sea monsoon will probably be delayed. For Upper Burma, north-east India, Mysore, and Malabar the indications are said to be conflicting and a useful forecast cannot be made.

THE Empire Forestry Association, which held its inaugural meeting in November last, was founded with the object of federating all the various societies interested in forestry throughout the Dominions overseas and India, as well as in the home countries. One of the functions of the Association is to disseminate information by means of a journal, *Empire Forestry*, the first number of which appeared in March. This contains about a dozen articles, the most important being a statement by Mr. R. L. Robinson, Forestry Commissioner, concerning forestry practice and available timber supplies throughout the Empire, based on the latest official information and statistics. Canada heads the list, as regards forest area, with 932,420 square miles of forest lands, of which, however, only 390,630 square miles are considered to be merchantable, the remainder being unprofitable or inaccessible. British India is second, with 126,310 square miles of merchantable forests; Nigeria is next, with 50,400 square miles; while Australia has 37,840 square miles. It is fortunate that 75 per cent. of the forest area of the Empire still belongs to the State. There is time yet to preserve the forests from ruthless destruction, by wise legislation aiming at effective regulations as regards felling, natural regeneration, and protection from fire. A useful feature in this number of *Empire Forestry* is a list of books, reports, and other publications on forestry and timbers, issued in 1920 and 1921.

REPORTS on lac, turpentine, and rosin have been issued by the Imperial Institute (London: J. Murray; 5s. net). Shellac is a characteristic Indian product, and indeed 94 per cent. of the world's supply comes from India and Burma. It is a resinous exudation produced by the lac insect, *Coccus lacca*, on various trees. In spite of the practical monopoly enjoyed, the state of the industry in India is not satisfactory, and recommendations for improvement in the manufacture are given. The other reports deal with Indian turpentine and rosin. These have been produced on a small scale for some time past in the United Provinces and the Punjab, only one species of pine, *Pinus longifolia*, being tapped commercially. The turpentine of this tree is unfortunately inferior to that produced in the American and French forests. It appears that a much better turpentine could be obtained from *Pinus excelsa*, another species widely spread in the Himalayas, but the yield is small. *Pinus khasya* might also be tapped in Assam and Burma. The industry is at present merely in the experimental stage; but it is predicted that, with energetic business methods, the total annual yield, which is now trifling, might be increased in ten years to 120,000 cwts. of turpentine and 430,000 cwts. of rosin.

A CASE in which two cuckoos were apparently reared together in the same nest by a cock blackbird is recorded by Miss E. R. Saunders, Newnham College, Cambridge. A blackbird's nest containing four eggs on which the cock bird was sitting was found and observed. The fact that a dead hen blackbird was found close by afterwards may account for the continued presence of the cock bird on the nest. When the eggs hatched, two of the nestlings were blackbirds, the bodies of which were found on the ground, while in the nest was a young cuckoo. Another young cuckoo was perched on a stake within a hand's breadth of the nest. Cuckoos frequent a belt of trees nearby, and it seems in this case that two eggs were deposited in the one nest.

IN regard to the correspondence in NATURE of March 9 and June 3, under the title "A Rainbow Peculiarity," on the enhanced brightness of the sky within the primary bow, Mr. L. C. W. Bonacina writes to point out that the fact is splendidly illustrated, and duly commented upon, by Mr. G. A. Clarke in his book on "Clouds" published in 1920 (Plate 35*b*).

A NEW classified list of second-hand scientific instruments (No. 75) has been issued by Mr. C. Baker, 244 High Holborn, W.C.1. As is customary in these well-known catalogues, the instruments are arranged in groups and there are long sections dealing with microscopes, many by first-class makers, and telescopes and accessories. Among the electrical apparatus we notice a Marconi receiving instrument, and there is also a quantity of apparatus suitable for other departments of physics as well as surveying and drawing instruments. Most of the apparatus can be inspected at Mr. Baker's premises. A novel feature is the offer for hire, at very moderate charges, of field- and opera-glasses of various types.

Our Astronomical Column.

SKJELLERUP'S COMET.—The identity of this comet with 1902 II. (Grigg) is now very highly probable. Mr. G. Merton finds, with the aid of recent Greenwich photographs, that the period of Skjellerup is close to 5·13 years, the other elements being nearly the same as those recently given in this column. Further, the following new orbit has been deduced for 1902 II., which represents the observed places within a few minutes of arc, an amount well within their probable error:

$$\begin{aligned} T &= 1902,\ \text{July } 2{\cdot}52 \text{ G.M.T.} \\ \left.\begin{aligned} \omega &= 346^\circ\ 41' \\ \Omega &= 222^\circ\ 40' \\ i &= 9^\circ\ \ 4' \end{aligned}\right\} &\ 1902{\cdot}0 \\ \phi &= 48^\circ\ 12' \\ \log a &= 0{\cdot}4662 \\ \text{Period} &= 5{\cdot}004 \text{ years.} \end{aligned}$$

The period was assumed, since the observations are not nearly precise enough to determine it. The other elements are fairly near those of Skjellerup. The differences are explicable by the fact that there was a very near approach to Jupiter at the beginning of 1905. By the above elements the comet was then in Longitude 29½°, N. Lat. 2°, log r 0·7081; Jupiter was in Longitude 32°, S. Lat. 1°, log r 0·6959.

THE PARIS ASTROGRAPHIC CATALOGUE.—M. Jules Baillaud notes in *Comptes rendus* for July 3 that this Catalogue, which extends from North Declination 18° to 24°, is approaching completion, and it is already possible to give data about the number of stars per plate in the different parts of the zone. He does this in two ways: (1) the uncorrected numbers, (2) the numbers after allowance has been made for variations due to imperfectly clear sky, less sensitive plates, etc. These have been estimated by comparing the overlapping portions of adjacent plates. Both sets of numbers are shown graphically. There are two steep peaks in the curve at 6^h and 21^h R.A., where the zone intersects the galaxy. The curve indicates 1100 stars per region of $6^\circ \times 6^\circ{\cdot}6$ at 6^h R.A., and 1200 stars at 21^h R.A.

The minima are at 3^h and 14^h R.A., where the star numbers are 150 and 70 respectively per $6^\circ \times 6^\circ{\cdot}6$. There is thus a 14-fold range in star-density. It will be noted that the minima do not fall symmetrically between the maxima.

OBSERVATIONS OF MARS AT SÉTIF, ALGERIA.—M. R. Jarry-Desloges has sent a report to the Paris Academy of Sciences of observations which he and M. G. Fournier have made this year (*Comptes rendus*, July 3). They have used two refractors, apertures 37 cm. and 26 cm.; it is noted that the smaller has practically no secondary spectrum, although there are only two lenses in the objective. While this is advantageous in most cases, M. Fournier finds that for the purpose of detecting slight colour-differences on the planets the former is preferable.

Some of the dusky regions in the southern hemisphere of Mars were seen to be covered with a misty veil, and M. Desloges notes that this was also seen in 1909 when the season on Mars was the same. He also directs attention to the difficulty of tracing the southern boundaries of these dusky regions: a similar difficulty was experienced in 1907, but in intermediate years these boundaries have been well defined. The misty veil is stated to be lifting, so that by June the boundaries could be traced. As a change that is probably not seasonal he adduces the present great development of the system Lacus Moeris, Nepenthes, Thoth, to the left of Syrtis Major. These features were not seen in 1907.

Lacus Phœnicis is large at present, and Lacus Solis is girdled by a system of dark streaks. Fons Juventæ has also been seen.